

REMARKS

I. Status of Claims

Claims 1, 3-4, 8-14, and 17-24 are pending in the application. Claims 1 and 23-24 are the only independent claims and currently amended. Support for the additional claim language can at least be found in paragraph [0053] of the Applicant's specification as published, as well as in FIG. 1. Thus, the Applicant respectfully believes that no new matter is added.

Claims 1, 3, 4, 8 – 14, and 17 – 24 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that the application regards as the invention.

Claims 1, 3, 4, 8 – 14, 17 – 22, and 24 stand rejected under 35 U.S.C. § 103(a) as allegedly being rendered obvious by U.S. Patent No. 6,080,503 (“Schmid”).

Claim 23 stands rejected under 35 U.S.C. § 103(a) as allegedly being rendered obvious by Schmid in view of U.S. Patent Application Publication No. 2002/0031698 (“Inoue”).

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Rejections Under 35 USC § 112

Claims 1, 3, 4, 8 – 14, and 17 – 24 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that the application regards as the invention.

The Office Action asserts that the recitation in independent claims 1, 23, and 24 of “a sealant made of a material that does not get dry or become solid” is indefinite. Without waiving any argument and to facilitate prosecution, the Applicant submits that this language has been amended as follows:

“a non-permanent sealant interposed between the plurality of components which is made of a non-solid material which does not get dry or become solid and that maintains an initial material state even under an environment where the fuel cell unit is used”

Support for this language may be found in at least paragraph [0053] of the present application.

The Office Action contends that the language in these claims merely sets forth physical characteristics rather than a specific composition. (Office Action at 4.) However, it is respectfully submitted that a rejection is appropriate when “the language of a claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement.” M.P.E.P. § 2173.02. Further, the “primary purpose of this requirement of definiteness of claim language is to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent.” *Id.* at § 2173. The Office Action appears to assert that the language is indefinite because no specific examples are given beyond those in the Markush group. However, the Applicant respectfully submits that there is no such requirement that additional specific examples be given in order to overcome an indefiniteness rejection. As such, the Office Action has provided no basis (either in case law or in the M.P.E.P.) that supports this proposition.

On the contrary, all that is required is that bounds of the claim are clear to those of ordinary skill in the art. As such, the “essential inquiry” for definiteness is whether the claim sets out the subject matter with “a reasonable degree of clarity and particularity.” *Id.* at § 2173.02. This inquiry is made, among other things, “in light of the content of the particular application” and “the teachings of the prior art.” *Id.*

Here, the claim describes the material used as a sealant as “non-solid.” One of ordinary skill in the art would surely understand the differences between solid and non-solid sealants in order to determine what constitutes infringement, particularly in light of the specification and prior art. Further, even the M.P.E.P., in addressing the definiteness requirement of § 112, suggests that the use of language relating to various states of matter is acceptable for purposes of definiteness. *See id.* at § 2173.02 (providing an example of an acceptably definite claim limitation that reads “a suitable liquid such as the filtrate of the contaminated liquid to be filtered and solids of a filtering agent” (emphasis supplied)).

With that said, if the Office Action still insists that some additional examples or broader categories of a suitable sealant beyond those in the Markush group be provided to satisfy the definiteness requirement, such an example can be found in paragraph [0070] of the present application. Here, it is described that the sealant may be made of “thermoplastic high polymer, such as a thermoplastic elastomer sheet.” Accordingly, it is respectfully submitted that in light of the specification, one of ordinary skill in the art would have a clear and particular

understanding of what is meant by a “non-solid” material for a sealant.

Additionally, the use of “non-permanent” in the claims adequately describes the claimed subject matter with sufficient particularity when viewed in light of the specification. The non-permanence (or removability) of the sealant is described in some detail in paragraph [0053] of the present application. For example, the sealant is said to allow the components to be “easily separable,” making it possible to “easily disassemble the modules and stacks.” Further, it is stated that “the sealant 32 can be easily removed off the components.” (*See also* paragraph [0067] of the present application.) These and other descriptions of the sealant’s ability to be easily removed provide one of ordinary skill in the art with a clear and particular meaning of a “non-permanent” material for a sealant.

For at least these reasons, the Applicant respectfully submits that the limitation above satisfies the definiteness requirement of § 112, second paragraph. Accordingly, it is respectfully submitted that the foregoing amendments to claims 1, 23, and 24 overcome the Office Action’s § 112 rejections.

III. Pending Claims

Claims 1 and 24 stand rejected under 35 U.S.C. § 103(a) as allegedly being rendered obvious by Schmid. Claim 23 stands rejected under 35 U.S.C. § 103(a) as allegedly being rendered obvious by Schmid in view of Inoue.

The Office Action alleges that Schmid, modified by routine skill in the art, teaches each limitation of the invention of claims 1 and 24 and that the combination of Schmid and Inoue teaches every limitation of claim 23. However, it is respectfully submitted that neither Schmid nor Inoue teach using a non-permanent sealant for a fuel cell stack as described in the present application.

Throughout the specification of the present application, a sealant is described that creates a fluid-tight seal on a fuel cell stack while still allowing for easy disassembly of the stack. In other words, the sealant is easily removed from the components in order to allow for improved flexibility in reusing or rebuilding of fuel cell stacks. This important feature is highlighted in the very first sentence of the “Summary of the Invention” section, which begins “[i]t is . . . an object of the invention to provide a seal structure of a fuel cell unit which permits easier rebuilding

(reassembling) and recycling of the fuel cell unit.” Unlike sealants previously used for fuel cell stacks, the sealant used in certain embodiments of the present invention does not get dry or become solid, thus not forming a permanent bond and allowing for easy disassembly of the fuel cell stack.

In contrast, Schmid describes a fuel cell using an adhesive to bond together permanently various components in a stack. Thus, the adhesive of Schmid is designed “to promote a strong and lasting adhesive bond” between the various components. (Schmid at col. 9 ll. 1 – 3 (emphasis supplied).) Also, Schmid states that “the adhesive bonding agent 50 is generally applied to the MEA, and the MEA is *consolidated* with the separator plates 11, 12 immediately after the application of adhesive or at least before full hardening of the adhesive.” (Schmid at col. 7 ll. 35 – 38) (emphasis added). That said, Schmid makes no mention of selecting a sealant based on its ease of removability. Instead, Schmid continually stresses the use of an adhesive (rather than a sealant) that “create[s] a firm bond,” and which has different characteristics than the sealant of the present application (*E.g., id.* at col. 8 ll. 33 – 35.) Thus, while claims 1, 23, and 24 of the present invention are directed to a fuel cell stack having a non-permanent sealant, the fuel cell taught by Schmid merely discloses the use of an adhesive to non-removably bond the various components together.

Further, Inoue does not make up for the deficiencies of Schmid. Inoue does not describe the use of a non-permanent sealant that is removable from a fuel cell stack to allow for easy disassembly of the stack. Rather, Inoue utilizes thermosetting materials as sealant (*See* paragraph [0175] of Inoue), and the thermosetting sealant hardens by applying heat in an assembly stage (*See* paragraph [0179] of Inoue). Thus, Inoue also has different characteristics than the sealant described in the present invention.

For at least these reasons, it is respectfully submitted that that the combination of Schmid and Inoue is improper because it does not teach each and every element of the inventions of claims 1, 23, and 24.

Accordingly, it is respectfully submitted that the inventions of claims 1, 23, and 24 are patentable over the cited references and that the rejections of the same should be withdrawn.

IV. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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